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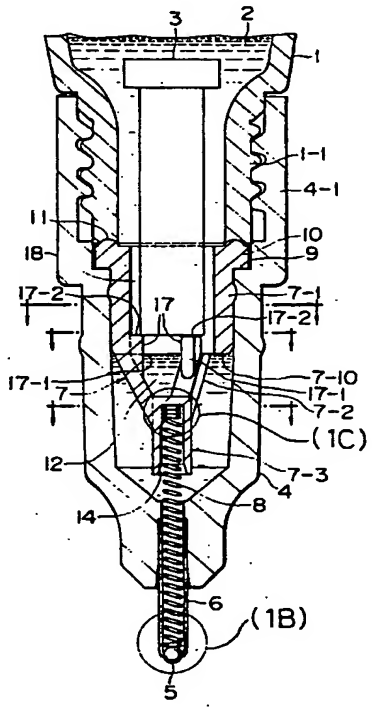
(54) WRITING UTENSIL

(57) An applicator for the correction of clerical errors or a writing tool such as a ball-point pen or the like is disclosed wherein a tip containing a rotary element, the rotary element being biased into contact with an inward front-end edge of the tip by means of a coiled spring, is connected through a ferrule holder to an ink tank containing a solid-liquid separable ink, the ink being discharged and transferred onto a writing paper by moving the rotary element backward away from the inward front-end edge of the tip against the coiled spring. A support piece (7) is disposed within the ferrule holder (4), the support piece (7) being an integrally molded piece comprising a cylindrical portion (7-1) disposed within the ferrule holder (4) in close contact with the inner surface of the ferrule holder, a plurality of support arms (7-2) inclined in a generally conical shape gradually from a front-end opening edge (7-10) of the cylindrical portion (7-1) toward the front, and a spring bearing portion (7-3) supported contiguously to the front ends of the support arms (7-2) and concentrically toward the front. When the writing tool is left standing with its pen point facing up, the solid-liquid separable ink (2) staying in both tip (6) and ferrule holder (4) can be returned quickly to the ink tank (1) through ink flow ports (12) which are each open largely at an opening area at least from the rear end of the spring bearing portion (7-3) to the front-end opening edge (7-10) of the cylindrical portion (7-1) in the space between adjacent support arms (7-2) of the support piece (7).

FIG.1A



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Description

TECHNICAL FIELD

The present invention relates to a writing tool and more particularly to an applicator for the correction of clerical errors or to a writing tool such as a ball-point pen wherein a tip containing a rotary element, the rotary element being biased forward into contact with an inward front-end edge of the tip by means of a coiled spring, is connected with an ink tank through a ferrule holder, the ink tank containing a solid-liquid separable ink and an agitation member, and when the applicator or the writing tool is to be used, the rotary element is retreated away from the inward front-end edge against the coiled spring, allowing the ink to be discharged and transferred onto a writing paper.

BACKGROUND ART

According to a conventional writing tool of this type, as shown in Figs.8A and 8B, a tip 21 containing a rotary element 22 inside its front end, the rotary element 22 being biased forward into contact with an inward front-end edge 21-1 of the tip by means of a coiled spring 20, is connected with the front end of an ink tank 24 through a ferrule holder 23, and the rotary element 22 is retreated away from the inward front-end edge 21-1 of the tip 21 against the coiled spring 20, whereby a solid-liquid separable ink 25 which has been fed from the ink tank 24 into the tip 21 through the ferrule holder 23 is discharged and transferred onto a writing paper or the like through a front-end opening of the tip formed by the retreat of the rotary element (this construction is known, for example, in Japanese Utility Model Laid-Open Nos. Hei 5-51480, 5-58362, 5-76568, 6-7984 and 6-7985).

The solid-liquid separable ink has the property that when left standing for a long time, the solid component of the ink is precipitated and agglomerated to form a cake. Therefore, when the writing tool is to be left standing for a long time after use, it is necessary that the ink residue in both ferrule holder and tip should return quickly into the ink tank. Otherwise, the solid component of the ink would begin to precipitate, with agglomeration of the precipitated solid component and formation of a cake. This may result in that the motion of the coiled spring and that of the rotary element are prevented completely by the cake. In other words, the opening/closing function of a valve mechanism constituted by both the inward front-end edge of the tip and the rotary element is lost completely by tee cake, with the result that the writing tool eventually becomes unemployable and is compelled to be discarded.

In the above conventional writing tool, however, the sectional area of the ink flow path from the ferrule holder 23 to the tip 21 is narrow and the ink 25 is difficult to flow, so even if the writing tool after use is left standing with its pen point facing up, the ink 25 remaining in both tip 21 and ferrule holder 23 is difficult to return completely into the ink tank 24. Consequently, with the lapse of time, the ink 25 separates into solids and liquid and the solid component begins to precipitate, with agglomeration and formation of a cake within the tip 21 and the ferrule holder 23. Thus, in the conventional writing tool containing a solid-liquid separable ink in the ink tank, the cake formed such precipitation and agglomeration of the solid component of the ink gives rise to problems frequently, and a remedial measure has been desired.

Accordingly, it is an object of the present invention to provide a writing tool wherein the residue of ink in both tip and ferrule holder returns quickly into an ink tank by turning the pen point upward after use. It is another object of the present invention to provide a writing tool wherein a coiled spring for biasing a rotary element forward can be mounted easily so as to exert a constant biasing force continually on the rotary element.

DISCLOSURE OF THE INVENTION

According to the gist of construction of the present invention, in a writing tool wherein a tip containing a rotary element, the rotary element being biased forward into contact with an inward front-end edge of the tip by means of a coiled spring, is connected through a ferrule holder with an ink tank containing a solid-liquid separable ink and also containing an agitation member, a support piece holding the coiled spring and having an ink flow port which provides communication between the ink tank and the ferrule holder is disposed in the interior of the ferrule holder, the said support piece being constituted by integrally molded components which are a cylindrical portion having front and rear opening and disposed within the ferrule holder in close contact with the inner surface of the same holder, a plurality of support arms inclined gradually forward in a generally conical shape from the front-end opening edge of the cylindrical portion, and a cylindrical spring bearing portion contiguous to the front end of the support arms and supported concentrically in the forward direction, with the rear end side of the coiled spring being inserted and held in the said spring bearing portion so as to be coaxial and resilient toward the rotary element, and the ink in the ink tank being supplied into the ferrule holder from ink flow ports, the ink flow ports each having an opening area at least from the rear end of the spring bearing portion up to the front-end opening edge of the cylindrical portion between adjacent support arms. According to this construction, when the pen point is turned up after use of the writing tool, the residue of ink in both tip and ferrule holder is returned quickly to the ink tank through the ink flow ports of the support piece, the ink flow ports each opening largely at an opening area from the rear end of the spring bearing portion up to the front-end opening edge of the cylindrical portion between adjacent support arms which connect the cylindrical portion and the spring bearing portion with each other. Besides,

the coiled spring can be inserted into the support piece so as to face the rotary element present inside the front end of the tip while it is held by the spring bearing portion of the support piece and while it is centered with respect to the axis of the tip. Thus, the coiled spring mounting operation is easy.

Moreover, according to the gist of the present invention, inwardly projecting protrusions are formed on the inner surface of the support piece portion where by the cylindrical portion and the support arms are contiguous to each other in such a manner that the inside diameter of a circle connecting the projecting inner surfaces of the protrusions is a size smaller than the outside diameter or spherical diameter of the agitation member and that the projecting end faces of the protrusions on the rear-end opening side of the cylindrical portion are positioned planarly in the circumferential direction. Consequently, there is attained a sufficient strength of the connection between each support arm and the cylindrical portion. Besides, when the agitation member, which is contained in the ink tank together with ink, moves to the pen point side by its own weight, it is received by the projecting end faces of the protrusions which are positioned planarly in the circumferential direction.

Further, according to the present invention, a retaining flange projecting outward in the shape of a ring is formed at the rear-end opening edge of the cylindrical portion of the support piece, while the inner surface of the connection port of the ferrule holder with the ink tank is formed with a restricting stepped portion for abutment therewith of the aforesaid retaining flange at the time of insertion of the support piece into the ferrule holder to restrict the amount of the support piece inserted into the ferrule holder. According to this construction, if the support piece is inserted into the ferrule holder from the connection port of the holder with the ink tank after allowing the coiled spring to be held by the spring bearing portion, the retaining flange of the cylindrical portion comes into abutment with the restricting stepped portion of the ferrule holder, whereby the amount of the support piece inserted into the ferrule holder is restricted. In other words, the coiled spring can be kept in abutment always at a constant biasing force with the rotary element located within the front end of the tip.

According to the gist of the present invention, moreover, the rear end side of the coiled spring is inserted and held in the spring bearing portion of the support piece by press-fitting or by threading, whereby the coiled spring can be held firmly in the spring bearing portion of the support piece.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig.1A is a longitudinal sectional view of a writing tool according to an embodiment of the present invention, Fig.1B is an enlarged view of the portion IB in Fig.1A, and Fig.1C is an enlarged view of the portion IC in Fig. 1A;

Fig.2 is an enlarged view similar to Fig.1C,showing another embodiment;

Fig.3 is a perspective view of a support piece;

Fig.4 is an enlarged cross sectional view taken online IV-IV in Fig. 1A;

Fig.5 is an enlarged cross sectional view taken on line V-V in Fig.1A;

Fig.6 is an enlarged cross sectional view taken on line VI-VI in Fig.1A, with a ferrule holder omitted;

Fig.7 is a longitudinal sectional view showing in what state the support piece with a coiled spring held therein is inserted into the ferrule holder; and

Fig.8A is a longitudinal sectional view showing a conventional example and Fig.8B is an enlarged view of the portion VIIIB in Fig.8A.

BEST MODE FOR CARRYING OUT THE INVENTION

The present invention will be described below in more detail with reference to the accompanying drawings.

Fig.1A shows a writing tool according to an embodiment of the present invention. In the same figure, an ink tank 1 is an integrally molded tank of a pen type or a bottle type, which is formed of a synthetic resin material or the like. The ink tank 1 contains a solid-liquid separable ink 2 and a rod-like agitation member 3. When the ink tank 1 is shaken up and down or right and left, the solid-liquid separable ink 2 is agitated by the agitation member 3. A ferrule holder 4 is connected to a front-end port 1-1 of the ink tank 1 in a sealed state to prevent leakage of the ink 2, and to the front end of the ferrule holder 4 is communicationwise connected a tip 6 which holds a rotary element 5 in the interior of its front end. The rotary element 5 is biased forward into contact with an inward front-end edge 6-1 of the tip 6 by means of a coiled spring 8, the coiled spring 8 being held by a spring bearing portion 7-3 to be described later of a support piece 7 and extending from the holder 4 into the tip 6 and set therein, the support piece 7 being fitted in the holder 4. The front-end opening of the tip 6 is closed by virtue of the coiled spring 8 (the state indicated with solid line in Fig.1B). When the writing tool is to be used, the rotary element 5 is brought into contact with the surface of a writing paper, allowing the rotary element 5 to be retreated inward of the tip 6 and away from the inward front-end edge 6-1 against the biasing force of the coiled spring 8, to open the front-end opening of the tip 6, whereby the ink 2 is discharged and transferred onto the writing paper surface (the state indicated with dash-double dot line in Fig.1B).

The ferrule holder 4, like the ink tank 1, is an integrally molded holder formed of a synthetic resin or the like and the whole thereof is in the shape of a stepped cylinder and in a generally tapered shape with the front end side constricted. The tip 6 is integrally connected to the front end of the ferrule holder 4 by press-fitting or

any other suitable means. And a connection port 4-1 at the rear end which port has been threaded integrally at the time of molding is threadedly connected to the fr nt-end port 1-1 of the ink tank 1. At an opening base end of the connection port 4-1 is formed a restricting stepped portion 9 to restrict the depth of the support piece 7 inserted into the ferrule holder 4. When the support piece 7 is inserted into the holder 4, a retaining flange 10 which will be described later comes into abutment with the restricting stepped portion 9.

The tip 6 is a pipe of a small diameter formed by using a metallic material or the like. The front-end opening edge of the tip 6 is bent inward to form the inward front-end edge 6-1, and the rotary element 5, which is also formed of a metallic material or the like, is brought into contact with the front-end edge 6-1 by virtue of the coiled spring 8 to close the front-end opening of the tip. Thus, in order to prevent unnecessary discharge of the ink 2, the tip 6 is equipped at the front end thereof with a valve mechanism comprising the inward front-end edge 6-1 and the rotary element 5.

The support piece 7, which is an integrally molded piece obtained by using a synthetic material or the like, comprises a cylindrical portion 7-1 fitted in the ferrule holder 4 in close contact with the inner surface of the ferrule and being open in the front and rear ends thereof, a plurality of support arms 7-2 gradually inclined from a front-end opening edge 7-10 of the cylindrical portion 7-1 toward the front in a generally conical shape, and a cylindrical spring bearing portion 7-3 contiguous to the front ends of the support arms 7-2 and supported concentrically toward the front. With the coiled spring 8 press-fitted or threaded into the spring bearing portion 7-3, the cylindrical portion 7-1 is press-fitted into the ferrule holder 4, whereby the the coiled spring 6 is loosely fitted in the tip 6 in a concentrically positioned state with respect to the axis of the tip and supports the rotary element 5 resiliently toward the inward front-end edge 6-1 of the tip.

The cylindrical portion 7-1 is in a cylindrical shape having a suitable length and having an outside diameter about the same as the inside diameter of the ferrule holder 4 and further having an inside diameter a size larger than the outside diameter of the rod-like agitation member 3. At the rear-end opening edge of the cylindrical portion 7-1 is formed a retaining flange 10 projecting outward in the form of a ring for abutment and engagement therewith of the restricting stepped portion 9 of the ferrule holder 4. When the support piece 7 is inserted into the ferrule holder 4, the retaining flange 10 restricts the depth of the support piece 7 inserted into the holder 4 so as to prevent the support piece from being inserted to a greater extent than necessary. Thus, the support piece 7 can be mounted always in a given position of insertion relative to the ferrule holder 4.

The end face of the cylindrical portion 7-1 having the retaining flange 10 is provided throughout the whole circumference thereof with a seal portion 11 which bites into the end face of the front-end port 1-1 of th ink tank 1 to prevent leakage of the ink from the connection of the ink tank 1 and the ferrule holder 4.

The support arms 7-2 extend from the front-end opening edge 7-10 of the cylindrical portion 7-1 in a gradually inclined state and in a rectangular shape in section corresponding to the wall thickness of the cylindrical portion 7-1, at several circumferential positions - three positions spaced at equal intervals in the circumferential direction in the drawings - so as to be in a generally conical shape toward the front. The thus-extending front ends of the support arms 7-2 support the outer peripheral surface of the rear end of the spring bearing portion 7-3 in an integral and contiguous manner, thereby forming ink flow ports 12 between the rear end of the spring bearing portion 7-3 and the front-end opening edge 7-10 of the cylindrical portion 7-1, the ink flow ports 12 providing communication between the ink tank 1 and the ferrule holder 4.

The ink flow ports 12 are each open largely at an opening area from the rear end of the spring bearing portion 7-3 to the front-end opening edge 7-10 of the cylindrical portion 7-1 in the space between adjacent ones of the three support arms 7-2 which connect the front-end opening edge 7-10 of the cylindrical portion 7-1 integrally with the rear end of the spring bearing portion 7-3 at equal intervals in the circumferential direction. Therefore, when the writing tool after use is left standing with its pen point or the tip 6 facing up, the ink 2 present in both tip 6 and ferrule holder 4 returns quickly into the ink tank 1 through the ink flow ports 12 without staying in the interiors of the tip and holder.

The spring bearing portion 7-3 functions to hold the coiled spring 8 in an inserted state therein of the rear end side of the same spring, and it is formed so as to have an inside diameter which is almost equal to or a size larger than the spiral outside diameter of the coiled spring 8. The spring bearing portion 7-3 is formed in the shape of a bottomed cylinder having a depth which permits the rear end side of the coiled spring 8 to be inserted in a suitable range of length. The spring bearing portion 7-3 is supported in an integral and contiguous manner by end portions of the support arms 7-2 extending in a gradually inclined state from the front-end opening edge 7-10 of the cylindrical portion 7-1 toward the outer peripheral surface of the closed rear end side of the spring bearing portion. In this way the spring bearing portion 7-3 is connected to the front of the cylindrical portion 7-1 concentrically at an appropriate spacing from the cylindrical portion.

On the inner surface on the internal bottom side of the spring bearing portion 7-3 are formed press-fit portions 13 circumferentially in several positions in an inwardly projecting fashion at an diameter equal to or smaller than the spiral outside diameter of the coiled spring 8 (see Figs.1C and 6) so that the rear end portion of the coiled spring (two or three spirals at the rear end) can be press-fitted and held therein. That is, on the rear

end side of the coiled spring 8, the other portion than the rear end portion which is press-fitted and held in the press-fit portions 13 of the spring bearing portion 7-3 is loosely inserted into the spring bearing portion 7-3 so that it can exert a spring effect of biasing the rotary element 5.

The inner surface shape of the opening of the spring bearing portion 7-3 is made divergent from a certain position near the opening toward the same opening so that at the time of mounting the coiled spring 8 an end portion of the coiled spring is guided by such divergent opening, indicated at 14, without being caught in the opening and is inserted loosely into the spring bearing portion 7-3. The coiled spring is then press-fitted and held on the internal bottom side of the spring bearing portion 7-3.

The method of anchoring the rear end portion of the coiled spring 8 with respect to the interior of the spring bearing portion 7-3 is not limited to the above method. There may be adopted such a structure as illustrated in Fig.2 in which internal threads 15 are formed in the inner surface of the internal bottom portion of the spring bearing portion 7-3 and the coiled spring is held herein by threaded engagement.

As shown in Fig.2, a flow portion 16 communicating with the interior of the spring bearing portion 7-3, such as a hole or a slit having an appropriate opening, with a diameter smaller than the inside spiral diameter of the coiled spring 8, is formed, for example, in the internal bottom of the spring bearing portion 7-3, so that when the writing tool is left standing with it pen point facing up, the ink 2 which has entered the spring bearing portion 7-3 during use of the writing tool returns to the ink tank 1 without remaining in the interior of the spring bearing portion. Some consideration may be given so that the solid component of the ink 2 which begins to precipitate with the lapse of time returns to the ink tank 1 through the flow portion 16 before agglomeration thereof in the interior of the spring bearing portion.

On the inner surfaces of the connections between the cylindrical portion 7-1 and the support arms 7-2 of the support piece 7 are formed protrusions 17 projecting inward (in the axial direction of the cylindrical portion 7-1) to improve the strength of the connection between the cylindrical portion and the support arms. An inside diameter r1 of a circle formed by connecting projecting inner surfaces 17-1 of the protrusions 17 in the circumferential direction is set a size smaller than an outside diameter r2 (see Fig.4) of the rod-like agitation member 3 ($r1<r2$), and projecting end faces 17-2 of the protrusions 17 on the rear-end opening side of the cylindrical portion 7-1 are projected so as to be positioned planarly in the circumferential direction, whereby when the pen point is faced downward for use (writing) of the writing tool, the agitation member 3 is received by the projecting end faces 17-2 of the protrusions 17 (the state of Fig.1A). In this case, according to the above construction, an ink flow clearance 18 is ensured between the agitation member 3 and the cylindrical portion 7-1, so that when the writing tool is used, the ink 2 stored in the ink tank 1 flows quickly through the ink flow clearanc 18 and ink flow ports 12 into the spring bearing portion 7-3 of the support piece 7 and into the ferrule holder 4 with the coiled spring 8 disposed inside concentrically. Thus, while the writing tool is in use, the ink 2 is supplied continuously from the ink tank 1 into the ferrule holder 4 and hence there is no fear of ink shortage.

Therefore, according to the writing tool of the present invention constructed as above, when the writing tool after use is left standing with it pen point facing upward, the ink 2 present in both tip 6 and ferrule holder 4 returns quickly into the ink tank 1 through the ink flow ports 12 which are open largely without staying in the interiors of the tip and holder. Thus, it is not likely that the solid component of ink 2 will be precipitated and agglomerated to form a cake within the tip 6 and ferrule holder 4, especially within the holder 4.

Moreover, while the coiled spring 8 is held firmly in the spring bearing portion 7-3 of the support piece 7 by press-fitting or by threaded engagement and while the centering of the coiled spring 8 with respect to the axis of the tip 6 is effected with certainty by insertion of the cylindrical portion 7-1 into the ferrule holder 4, the coiled spring 8 can be inserted from the interior of the ferrule holder 4 into the tip 6. Thus, the coiled spring mounting operation can be done in a simple and efficient manner, and consequently it is possible to improve the productivity.

Further, the depth of the support piece 7 inserted into the ferrule holder 4 is restricted by abutment of the retaining flange 10 of the cylindrical portion 7-1 with the restricting stepped portion 9 of the ferrule holder 4. That is, the support piece 7 can held always in a predetermined certain position in the ferrule holder 4. Accordingly, the coiled spring 8 can be kept in abutment at a constant biasing force with the rotary element 5 disposed in the interior of the tip front end, and hence it is possible to attain the stabilization of quality.

INDUSTRIAL APPLICABILITY

According to the writing tool of the present invention, as set forth above, when the writing tool after use is left standing with its pen point facing up, the ink present in both tip and ferrule holder can return to the ink tank quickly through the ink flow ports of the support piece which ports are open largely, whereby the problem caused by the precipitation and agglomeration of the solid component of ink which separates into solids and liquid with the lapse of time and consequent formation of cake, is solved and the opening/closing function of the valve mechanism constituted by both inward front-end edge of the tip and rotary element can be ensured positively and stably over a long period of time. Thus, the present invention is suitable for a writing tool of a construction wherein a solid-liquid separable ink is

stored in an ink tank and is discharged and transferred onto a writing paper by an opening motion of a valve mechanism constituted by both an inward front-end edge of a tip and a rotary element. For example, the present invention is useful as an applicator for the correction of clerical errors which applicator applies a correcting solution to a clerical error portion.

Claims

1. In a writing tool wherein a tip (6) is connected through a ferrule holder (4) to an ink tank (1) which contains both a solid-liquid separable ink (2) and an agitation member (3), and a rotary element (5) is disposed in the interior of the front end of the tip (6), the rotary element (5) being biased forward into contact with an inward front-end edge (6-1) by means of a coiled spring (8), the improvement characterized in that:

   in the interior of the ferrule holder (4) is disposed a support piece (7) which holds the coiled spring (8) and which has ink flow ports (12), the ink flow ports (12) providing communication between the ink tank (1) and the ferrule holder (4), the support piece (7) being an integrally molded piece comprising a cylindrical portion (7-1) having front and rear openings and disposed within the ferrule holder (4) in close contact with the inner surface of the holder (4), a plurality of support arms (7-2) inclined in a generally conical shape gradually from a front-end opening edge (7-10) of the cylindrical portion (7-1) toward the front, and a cylindrical spring bearing portion (7-3) supported contiguously to the front ends of the support arms (7-2) and concentrically toward the front, the rear end side of the coiled spring (8) is inserted and held in the spring bearing portion (7-3) to support the coiled spring concentrically and resiliently toward the rotary element (5), and the solid-liquid separable ink (2) in the ink tank (1) is supplied into the ferrule holder (4) through ink flow ports (12), the ink flow ports (12) each having an opening area at least from the rear end of the spring bearing portion (7-3) to the front-end opening edge of the cylindrical portion (7-1) in the space between adjacent support arms (7-2).

2. A writing tool according to claim 1, wherein inwardly projecting protrusions (17) are formed on the inner surfaces of the connections between the cylindrical portion (7-1) and the support arms (7-2) of the support piece (7), and an inside diameter (r1) of a circle obtained by connecting projecting inner faces (17-1) of the protrusions (17) in the circumferential direction is a size smaller than an outsid diameter or a spherical diameter (r2) of the agitation member (3).

3. A writing tool according to claim 1 or claim 2, wherein a retaining flange (10) projecting outward in the shape of a ring is formed at the rear-end opening edge of the cylindrical portion (7-1), and the inner surface of a connection port (4-1) of the ferrule holder (4) for connection with the ink tank (1) is formed with a restricting stepped portion (9) for abutment with the retaining flange (10) at the time of insertion of the support piece (7) into the ferrule holder (4) to restrict the depth of the support piece (7) inserted into the ferrule holder.

4. A writing tool according to any of claims 1 to 3, wherein the rear end side of the coiled spring (8) is inserted into the spring bearing portion (7-3) of the support piece (7) by press-fitting or by threaded engagement.

FIG.1A

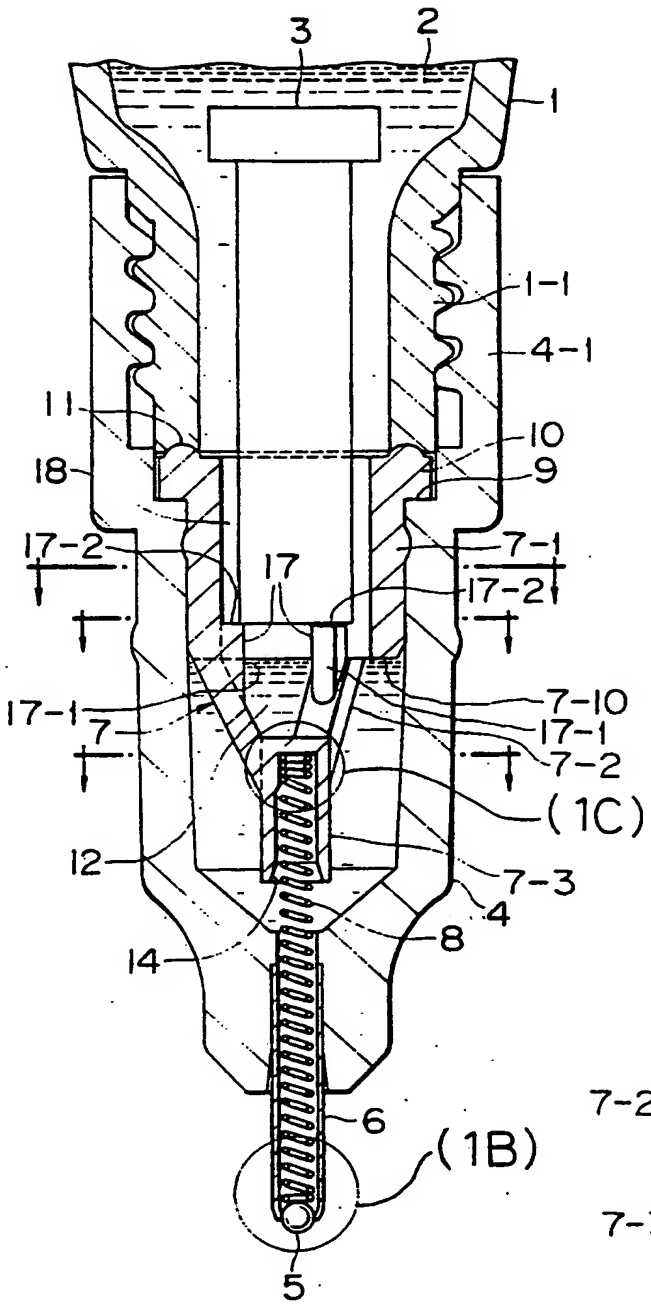


FIG.1B

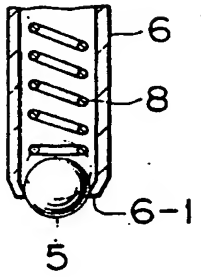


FIG.1C

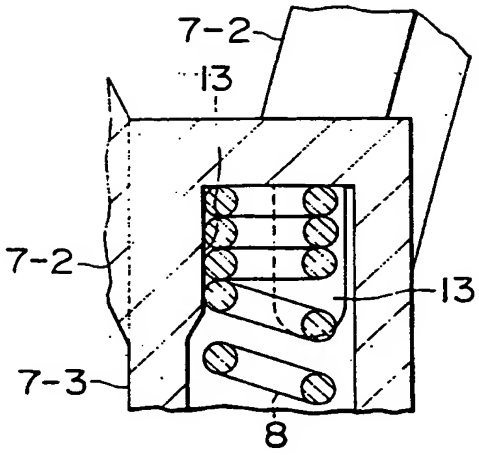


FIG. 2

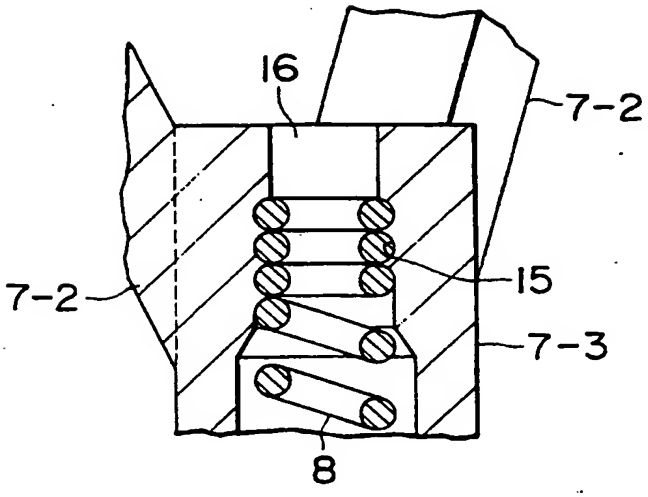


FIG. 3

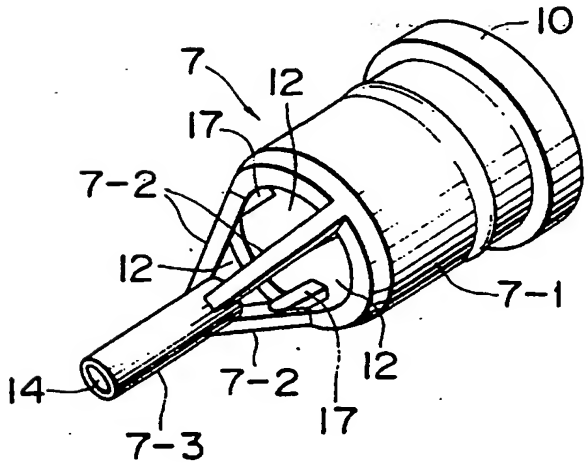


FIG.4

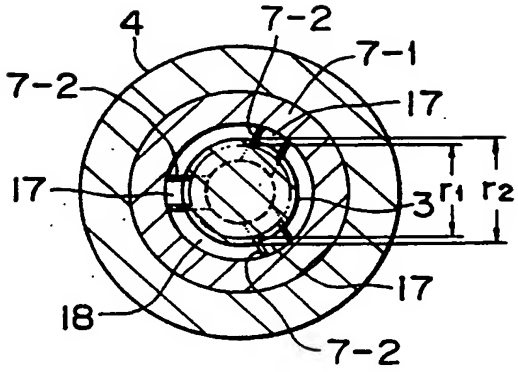


FIG.5

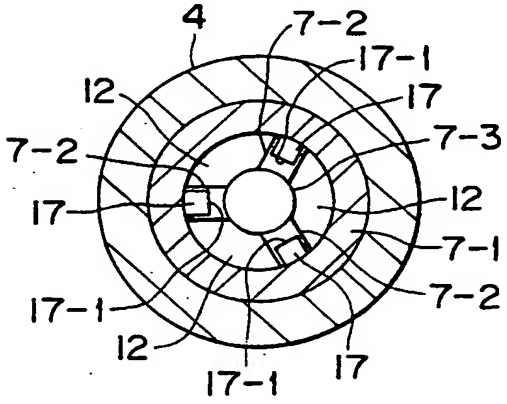


FIG.6

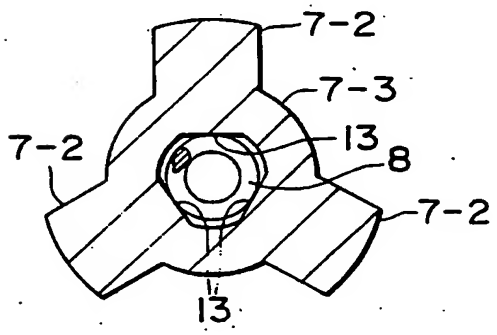


FIG.7

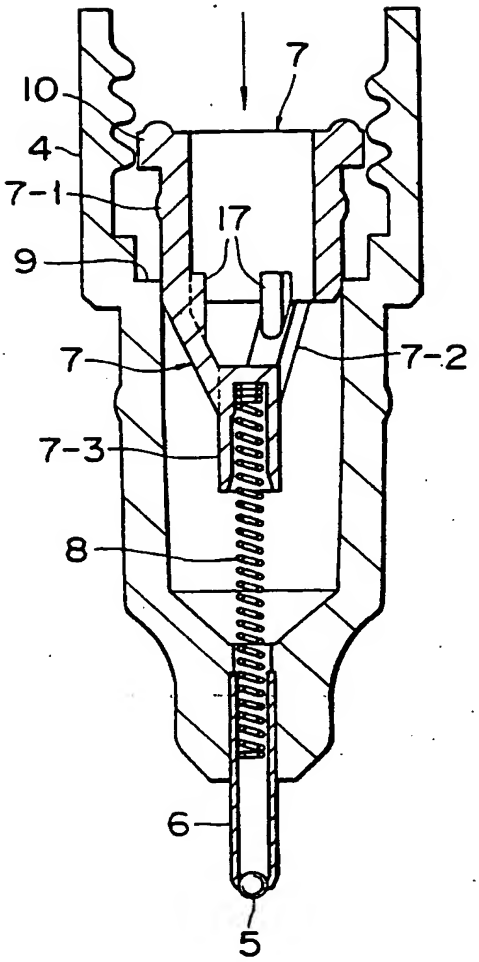


FIG. 8A

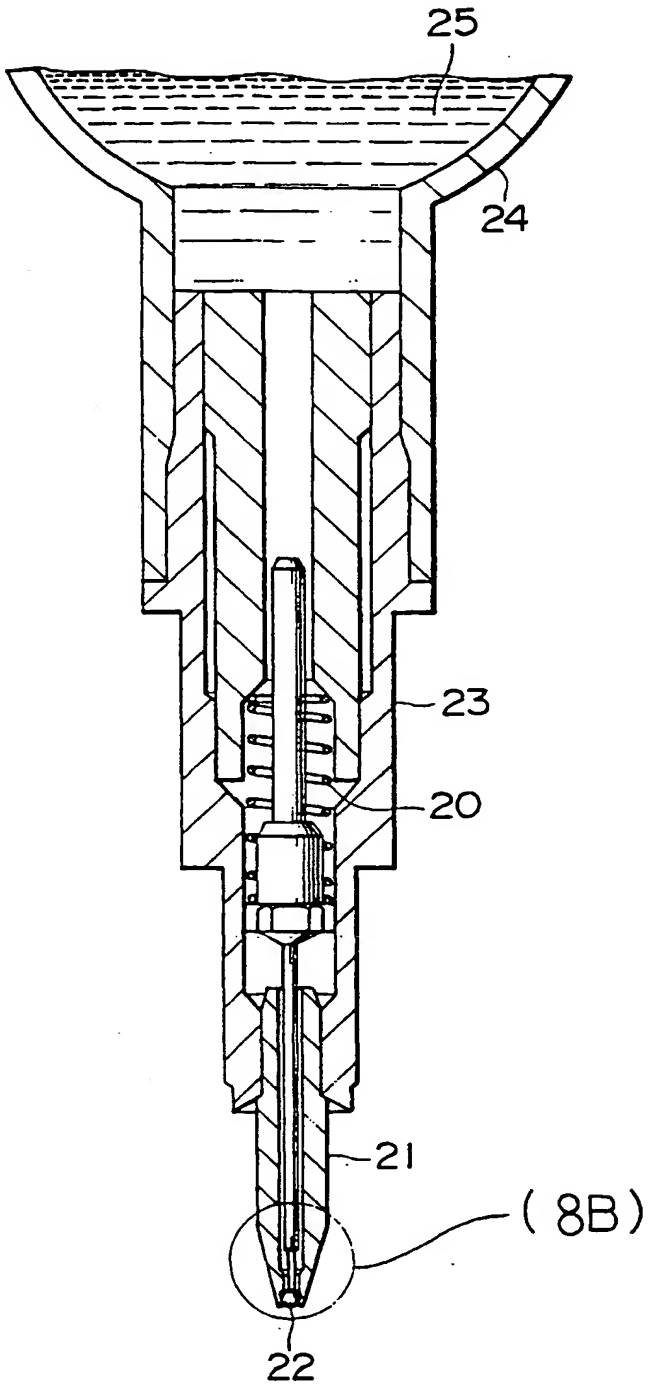
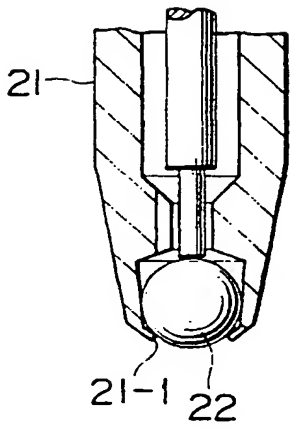


FIG. 8B



INTERNATIONAL SEARCH REPORT*

International application No.
PCT/JP96/01360

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl^6 B43K7/02, B43K7/10, B43L19/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
Int. Cl^6 B43K7/02, B43K7/10, B43L19/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1948 - 1996
Kokai Jitsuyo Shinan Koho 1973 - 1996
Toroku Jitsuyo Shinan Koho 1994 - 1996

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP, 5-76569, U (The Sailor Pen Co., Ltd.), October 19, 1993 (19. 10. 93) (Family: none)	1 - 4
A	JP, 8-52984, A (K.K. Kotobuki), February 27, 1996 (27. 02. 96) (Family: none)	1 - 4

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
August 2, 1996 (02. 08. 96)	August 13, 1996 (13. 08. 96)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

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